McIntosh

# MA 6100

## PREAMP AMPLIFIER

# SERVICE INFORMATION

STARTING WITH SERIAL NO. AE1001

McINTOSH LABORATORY INC. 2 CHAMBERS STREET BINGHAMTON, NEW YORK

# PERFORMANCE LIMITS

POWER OUTPUT

70 watts continuous per channel into 4 or 8 ohms with both channels operating.

40 watts continuous per channel into 16 ohms with both channels operating.

HARMONIC DISTORTION

Does not exceed 0.20% at rated power output from 20Hz to 20,000Hz with both channels operating. Typical performance is less than 0.1% at rated power. Distortion decreases as output is reduced.

INTERMODULATION DISTORTION

Does not exceed 0.20% if instantaneous peak power output is twice rated power or less per channel with both channels operating for any combination of frequencies 20Hz to 20,000Hz.

DAMPING FACTOR

50 with 8 ohm load.

FREQUENCY RESPONSE

±0.5dB 20Hz through 20,000Hz.

INPUT SENSITIVITY AND IMPEDANCE

Auxilliary, Tuner, Tape 1 and Tape 2: 300mV, 250K ohms.
Phono 1 and Phono 2: 2.5mV at 1000Hz, 47K ohms.
Tape Head: 3mV at 500Hz, 500K ohms.
Power Amplifier: 3V, 100K ohms.

TOTAL NOISE

Phono and Tape Head Input: 76dB below rated output when adjusted for 10mV input.

Auxilliary, Tuner, and Tape Input: 90dB below rated output.

Power Amplifier Input: 95dB below rated output.

TAPE OUTPUT

300mV with rated input, 1.2 volts with 10mV at phono input at 1000Hz.

PREAMP OUTPUT

3.0 volts with rated input.

BASS CONTROLS

±16dB at 20Hz.

TREBLE CONTROLS

±16dB at 20,000Hz.

L.F. FILTER

Active filter, more than 12dB per octave roll off below 50Hz, down 20dB at 20Hz.

H.F. FILTER

Active filter more than 12dB per octave roll off above 7,000Hz, down 20dB at 20,000Hz.

POWER REQUIREMENT

120 volts, 50-60Hz, AC, 50 watts at zero signal output - 380 watts at rated power output.

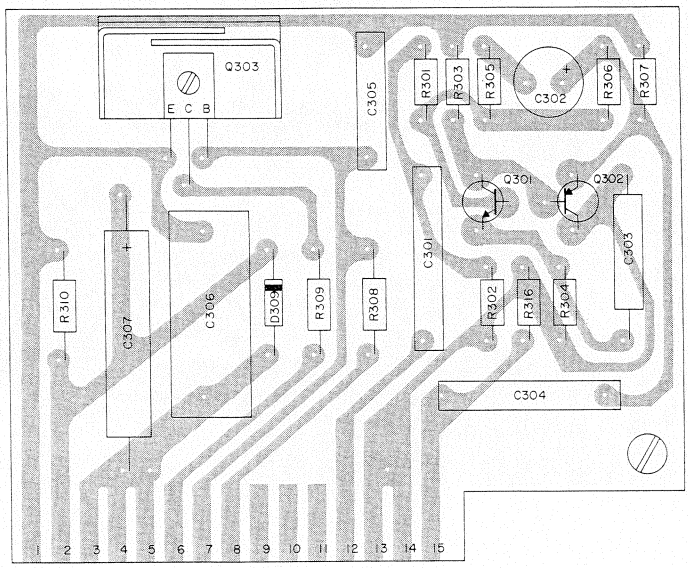
SIZE

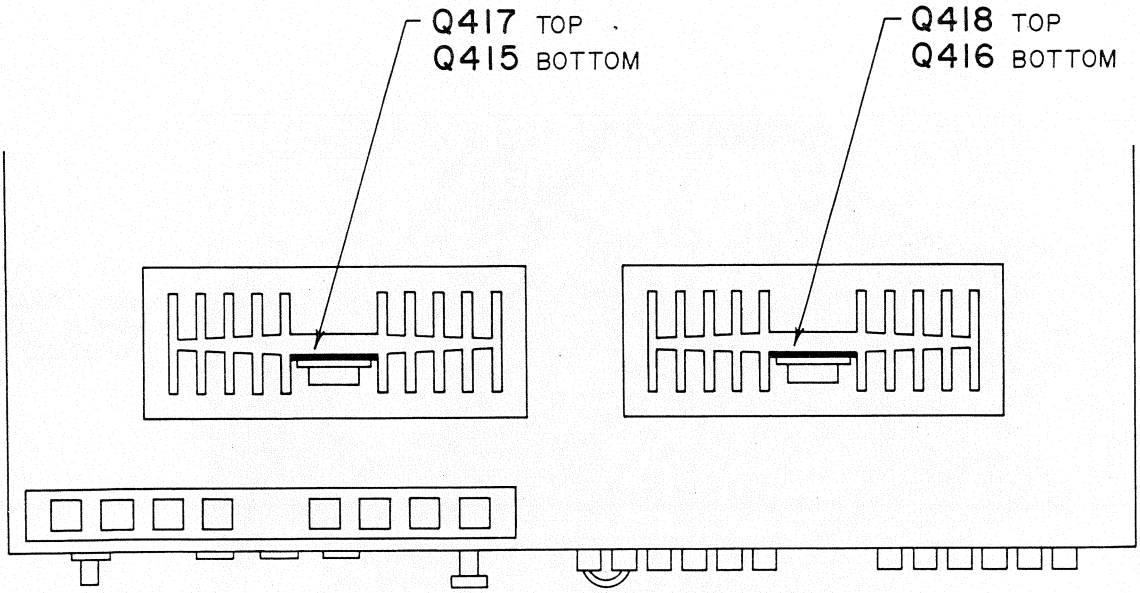
Front panel, 16 inches (40.65cm) wide by 5-7/16 (13.8cm) high.
Chassis, 15 inches (38.1cm) by 13 inches (33.1cm) deep.
Knob clearance required, 1-1/4 inches (3.2cm) in front of mounting panel.

WEIGHT

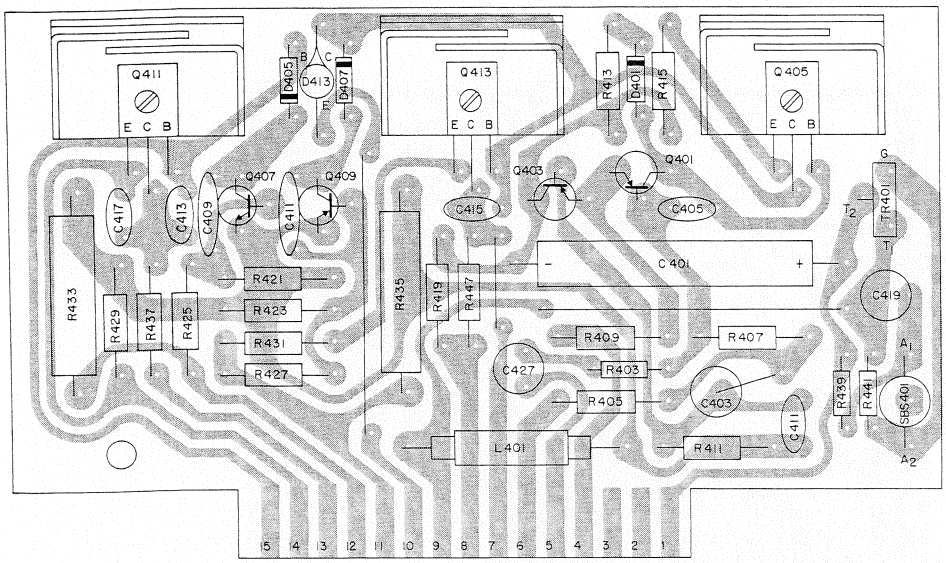
34 pounds net, 46 pounds shipping.

REG & PHASE INVERTER PC BOARD 044-419

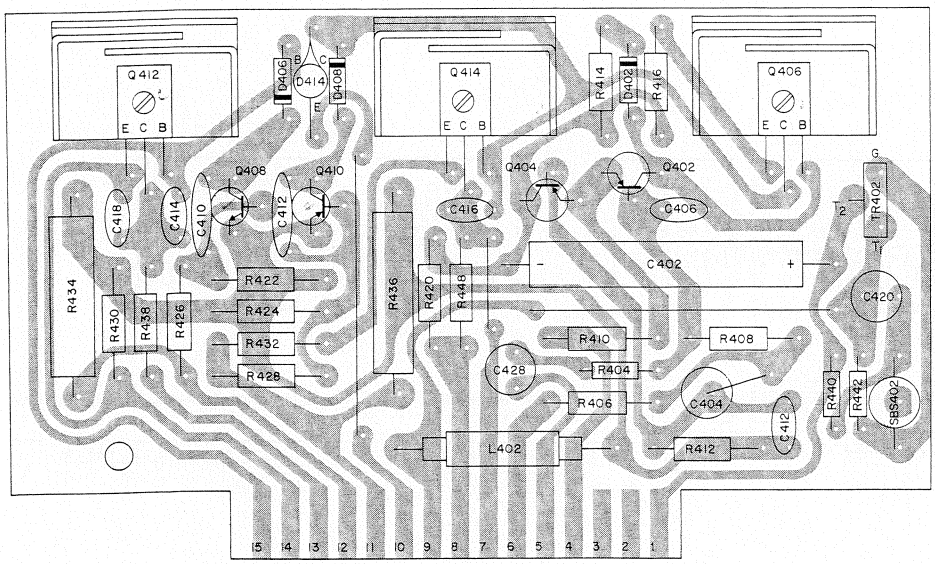



LOCATION OF TRANSISTORS NOT ON PC BOARD

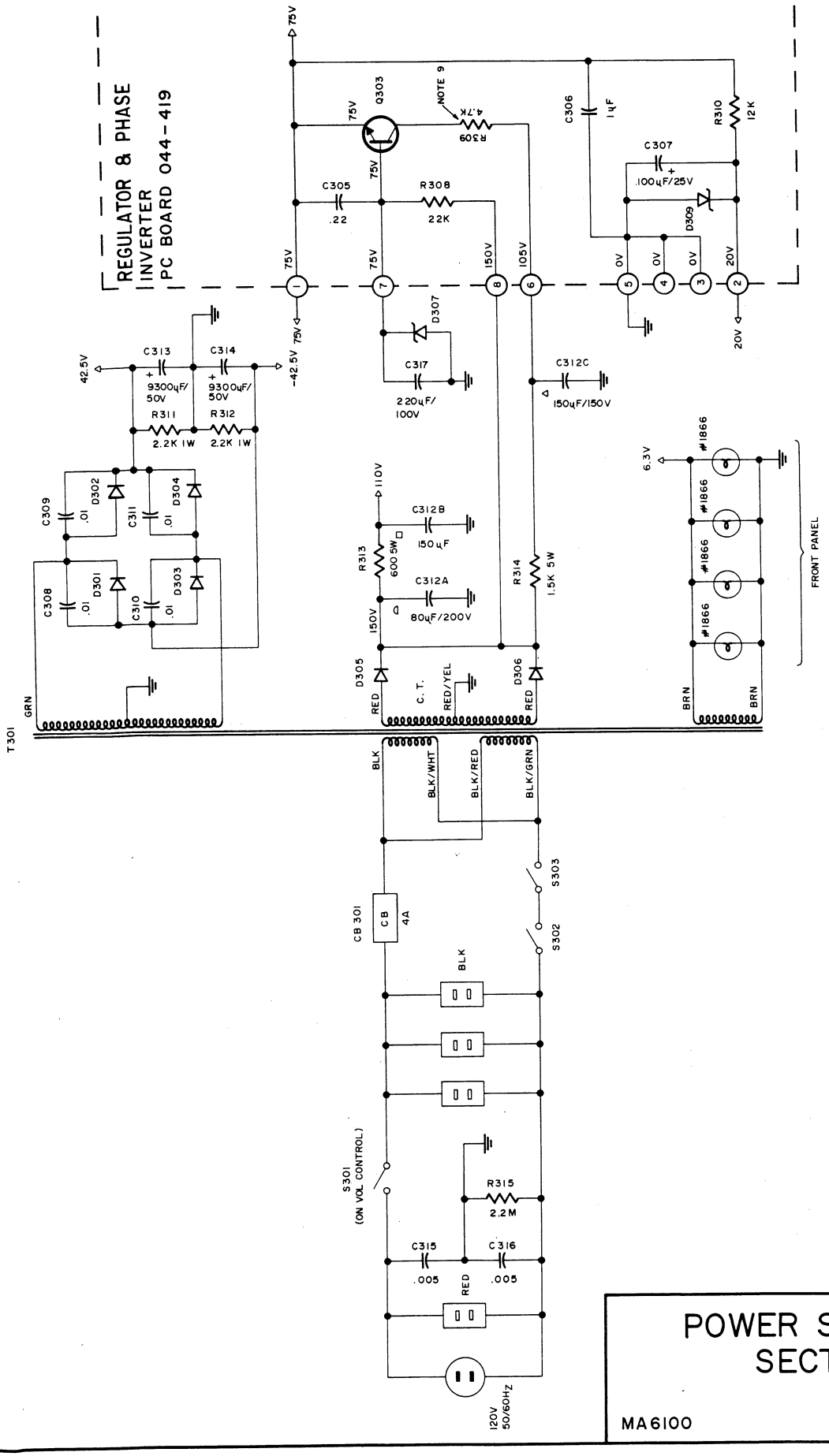



LEFT CHANNEL
POWER OUTPUT
PC BOARD 044-480




RIGHT CHANNEL
POWER OUTPUT
PC BOARD 044-480

Q 402 + Q 404
Typ 056 M 436 = BC 416 C




# POWER SUPPLY SECTION

MA6100 154-616

# SCHEMATIC NOTES

1. Unless otherwise specified: Resistance values are in ohms, 1/4 watt, and 10% tolerance; Capacitance values smaller then 1 are in microfarads (μF); capacitance values greater than 1 are in picofarads (pF); inductors are in microhenries (μH).

2. Printed circuit board components are outlined on the schematics by dotted lines. The circled numbers around the dotted lines correspond to the numbers on the PC Board layouts.

3. The heavy lines on the schematics denote the primary signal path.

4. The terminal numbering of rotary switches is for reference only.

5. All voltages indicated on the schematics are measured under the following conditions:

   a. Use of an 11 megohm input impedance VTVM.

   b. All voltages ±10% with respect to chassis ground.

   c. No signal at input terminals.

   d. AC input at 120 volts, 50/60 Hz.

   e. Front panel controls at:

| | | | |
|---|---|---|---|
| Volume | Fully CW | Tape mon. | out |
| Input selector | Aux | Tape copy | out |
| Mode selector | Stereo | Filters | out |
| Balance control | Zero | Phase | out |
| Comp | Flat | Speakers | out |
| Tone controls | Flat | | |

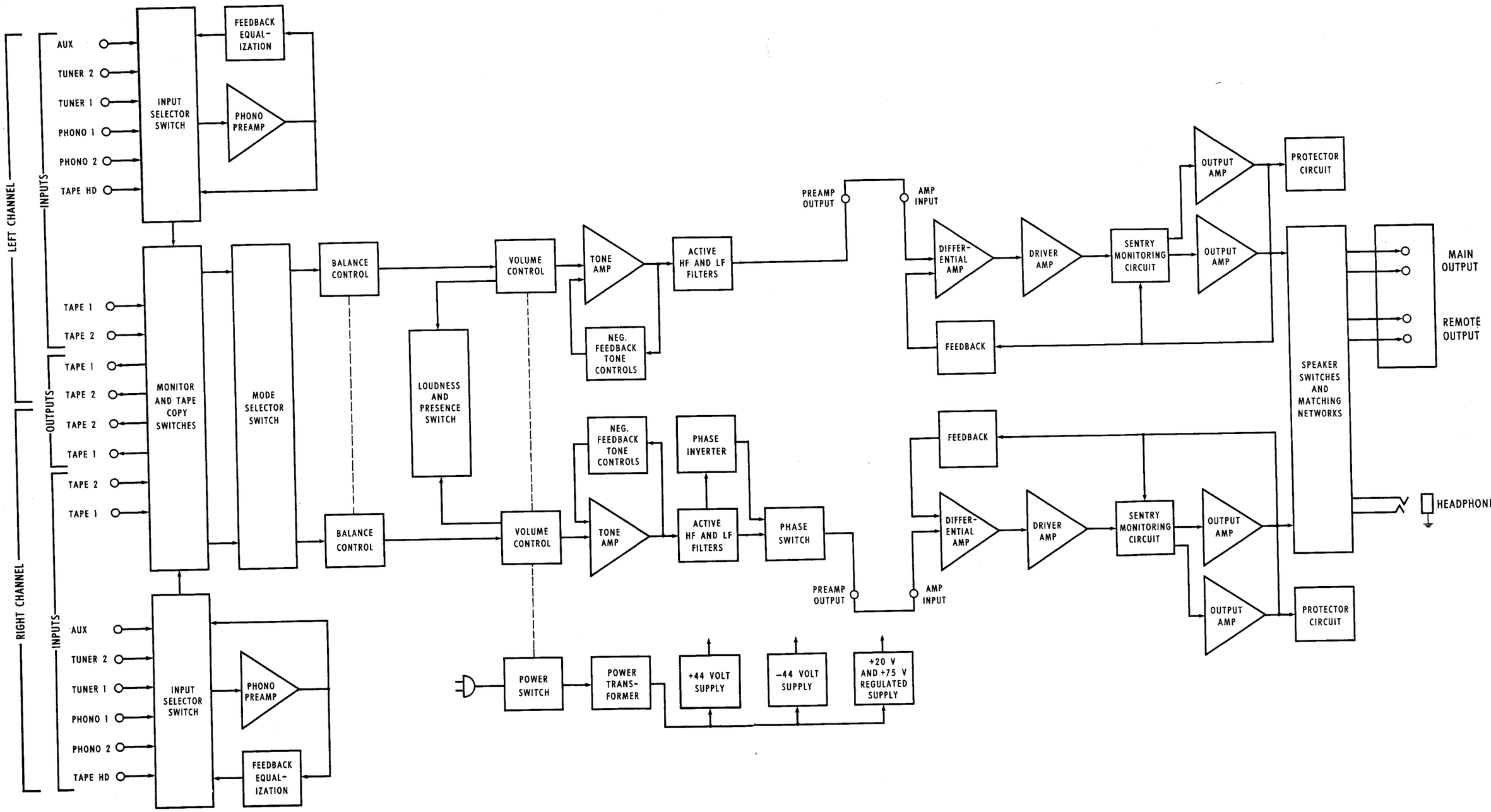
6. In units with Serial No's below AE1453; C415 & C416 are 1000pF. C413 & C414 are 1000μF and C407 & C408 are 470pF.

7. In early export units R429, R430, R447 & R448 are 47Ω.

8. In units with Serial No's below AE2557; C117 and C118 are 12pF.

9. In units with Serial No's below AE2075; R309 is D308. (McIntosh Part No. 070-064)

10. In units with Serial No's below AE2122; R211 & R212 are McIntosh Part No. 134-354 and R227 & R228 are McIntosh Part No. 134-253.

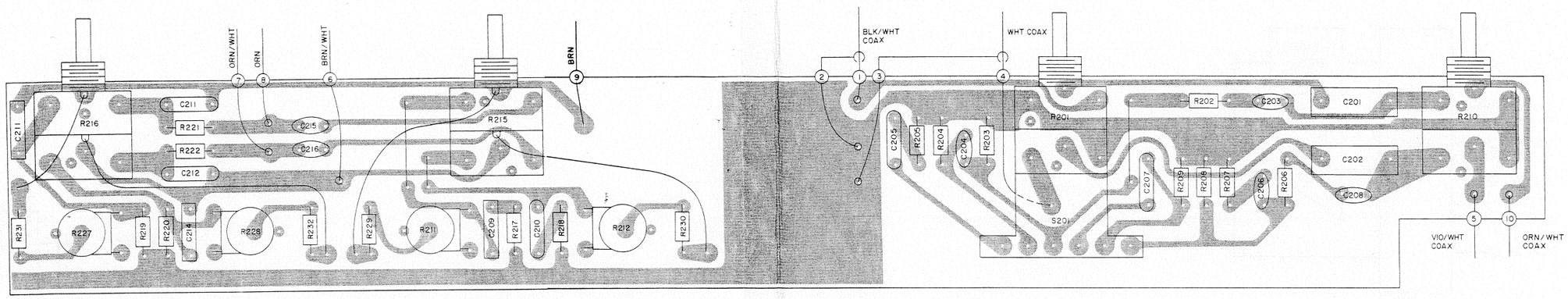



MA6100 BLOCK DIAGRAM

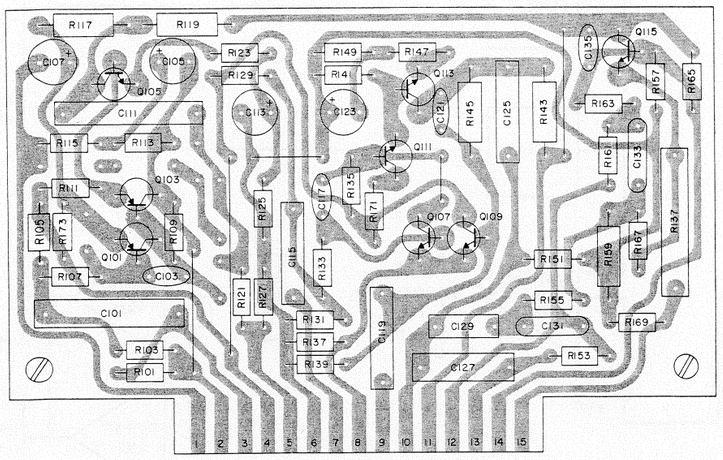
MA 6100

## TONE & VOLUME CONTROL PC BOARD 044-514

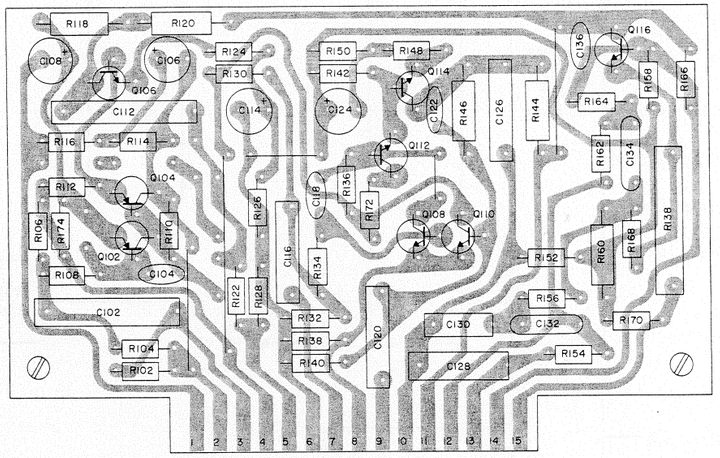
NOTE 10



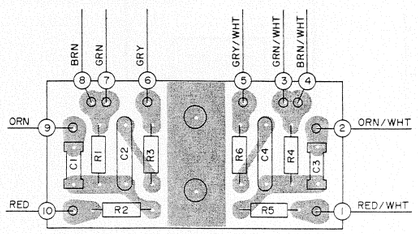

LEFT CHANNEL PREAMP PC BOARD 044-512

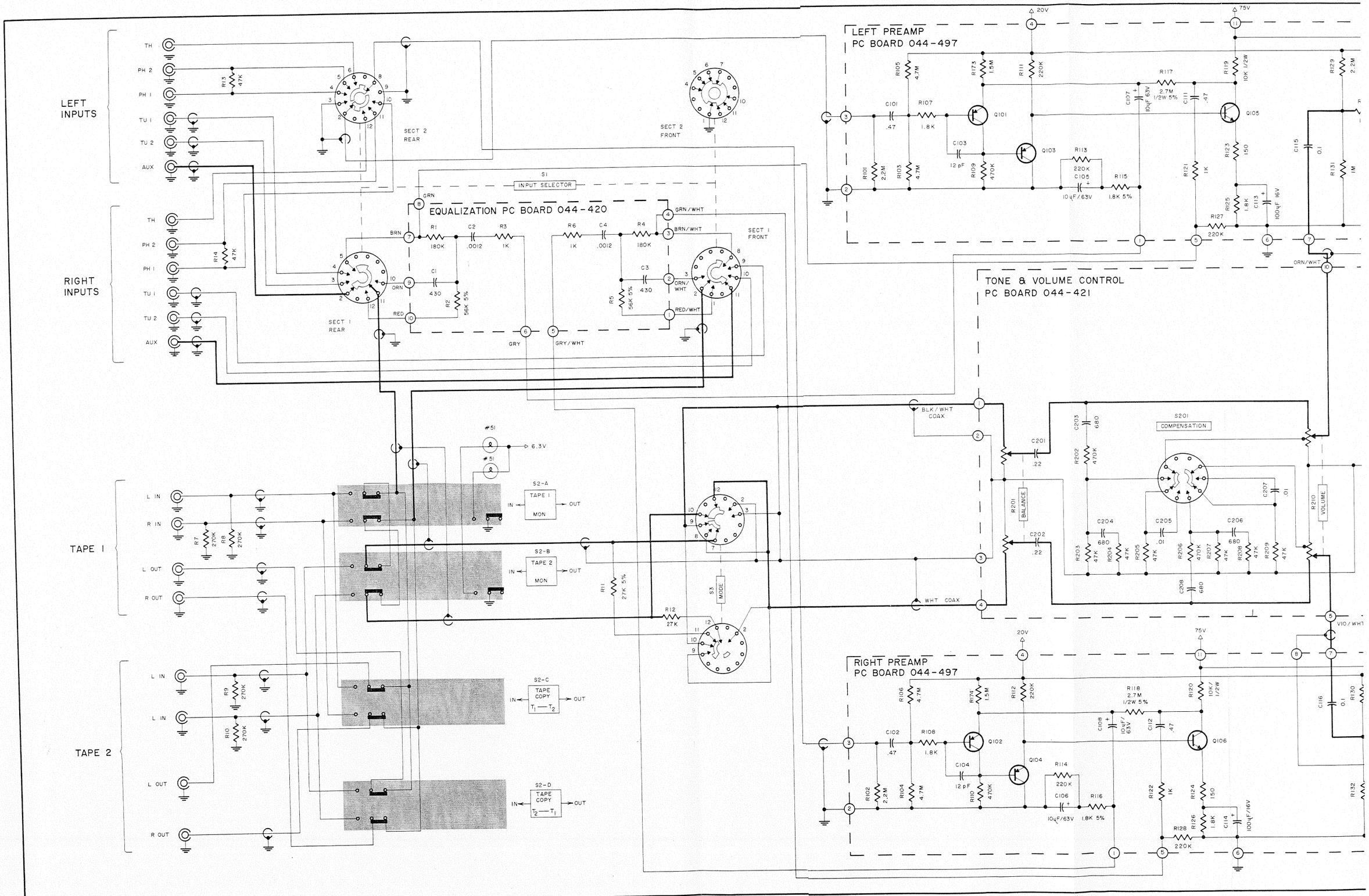



RIGHT CHANNEL PREAMP PC BOARD 044-512




## EQUALIZATION PC BOARD 044-420




LEFT INPUTS
RIGHT INPUTS
TAPE 1
TAPE 2
TH
PH 2
PH 1
TU 1
TU 2
AUX
L IN
R IN
L OUT
R OUT
R13 47K
R14 47K
R7 270K
R8 270K
R9 270K
R10 270K
SECT 2 REAR
SECT 2 FRONT
SECT 1 REAR
SECT 1 FRONT
S1 INPUT SELECTOR
EQUALIZATION PC BOARD 044-420
R1 180K
R2 56K 5%
R3 1K
R4 180K
R5 56K 5%
R6 1K
C1 430
C2 .0012
C3 430
C4 .0012
GRN
BRN
ORN
RED
GRY
GRY/WHT
GRN/WHT
BRN/WHT
ORN/WHT
RED/WHT
#51
6.3V
S2-A TAPE 1 MON
S2-B TAPE 2 MON
S2-C TAPE COPY T1 — T2
S2-D TAPE COPY T2 — T1
IN
OUT
R11 27K 5%
R12 27K
S3 MODE
LEFT PREAMP
PC BOARD 044-497
RIGHT PREAMP
PC BOARD 044-497
20V
7.5V
R101 2.2M
R103 4.7M
R105 4.7M
R107 1.8K
R109 470K
R111 220K
R113 220K
R115 1.8K 5%
R117 2.7M 1/2W 5%
R119 10K 1/2W
R121 1K
R123 150
R125 1.8K
R127 220K
R129 2.2M
R131 1M
C101 .47
C103 12 pF
C105 10µF/63V
C107 10µF 63V
C111 .47
C113 100µF 16V
C115 0.1
Q101
Q103
Q105
TONE & VOLUME CONTROL
PC BOARD 044-421
BLK/WHT COAX
WHT COAX
VIO/WHT
S201 COMPENSATION
R201 BALANCE
R210 VOLUME
C201 .22
C202 .22
C203 680
C204 680
C205 .01
C206 680
C207 .01
C208 680
R202 470K
R203 47K
R204 47K
R205 47K
R206 470K
R207 47K
R208 47K
R209 47K
R102 2.2M
R104 4.7M
R106 4.7M
R108 1.8K
R110 470K
R112 220K
R114 220K
R116 1.8K 5%
R118 2.7M 1/2W 5%
R120 10K 1/2W
R122 1K
R124 150
R126 1.8K
R128 220K
R130
R132
C102 .47
C104 12 pF
C106 10µF/63V
C108 10µF/63V
C112 .47
C114 100µF/16V
C116 0.1
Q102
Q104
Q106

# PREAMP SECTION

MA 6100 154 - 615

TONE & VOLUME CONTROL
PC BOARD 044-421

LEFT PREAMP OUTPUT

RIGHT PREAMP OUTPUT

REG. & PHASE INVERTER PC BOARD 044-419

20V

75V

S201 COMPENSATION

R201 BALANCE

R210 VOLUME

R215 TREBLE

R216 BASS

S2-E IN L.F. OUT

S2-F IN H.F. OUT

S2-G IN 180° PHASE OUT 0°

NOTE 8

ORN/WHT

BRN

ORN

V10/WHT

BRN/WHT

ORN/WHT

MA 6100
MA 6100

LEFT CHANNEL POWER OUTPUT PC BOARD 044-480

RIGHT CHANNEL POWER OUTPUT PC BOARD 044-480

LEFT AMP INPUT

RIGHT AMP INPUT

COAX

NOTE 6

NOTE 7

SBS 401

SBS 402

TR401

TR402

LEFT CHANNEL POWER OUTPUT PC BOARD 044-480

RIGHT CHANNEL POWER OUTPUT PC BOARD 044-480

MAIN SPEAKER

REMOTE SPEAKERS

HEADPHONES

# POWER OUTPUT SECTION

MA 6100 154-597

| | | | |
|---|---|---|---|
| | **RESISTORS** | | |
| R313 | Wirewound 600Ω | 5W | 139-043 |
| R314 | Wirewound 1.5K | 5W | 139-079 |
| R401,402 | Wirewound 3.6K | 10W | 139-047 |
| R433,434 | Wirewound .33Ω | 5W | 139-080 |
| R435,436 | Wirewound .33Ω | 5W | 139-080 |
| | **SWITCHES** | | |
| S1 | Input selector switch | | 146-153 |
| S3 | Mode selector switch | | 146-134 |
| | **TRANSFORMERS** | | |
| T301 | Power transformer | | 044-418 |
| | **THYRISTORS & TRIGGERS** | | |
| SBS401,402 | Bilateral switch | | 131-004 |
| TR401,402 | Triac | | 131-005 |
| | **FRONT PANEL & TRIM** | | |
| | Front panel | | 044-423 |
| | Front panel end caps | | 018-154 |
| | Balance control knob | | 044-375 |
| | Comp control knob | | 090-100 |
| | Bass knob (front) | | 044-375 |
| | Bass knob (rear) | | 090-100 |
| | Treble knob (front) | | 044-375 |
| | Treble knob (rear) | | 090-100 |
| | Volume control knob | | 044-372 |
| | Mode selector knob | | 044-372 |
| | Input selector knob | | 044-372 |
| | **LAMPS** | | |
| | Panel illumination #1866 | | 058-014 |
| | Switch indicator #51 | | 058-021 |
| | **MOUNTING SYSTEM** | | |
| | Shelf bracket (right) | | 043-622 |
| | Shelf bracket (left) | | 043-623 |
| | Mounting template #100 | | 038-179 |
| | Hardware package | | 043-608 |
| | **MISCELLANEOUS ITEMS** | | |
| | Plastic feet | | 017-156 |
| | Shipping carton | | 044-510 |
| | Owners manual | | 038-611 |
| | Line cord | | 170-021 |
| | Jumper | | 015-005 |

20C0806S7-M3741-3

# REPLACEMENT PARTS

All parts not listed are common items obtainable from radio parts jobbers.

Replacement parts may be obtained when ordered by PART NUMBER from:

McIntosh Laboratory, Inc.
Customer Service Department
2 Chambers Street
Binghamton, New York 13903
(telephone 607-723-3512)

## CAPACITORS

| Symbol Number | Description | | | Part Number |
|---|---|---|---|---|
| C101,102 | Mylar | .47μF | 250V | 064-069 |
| C105,106 | Ta. Elect | 10μF | 63V | 066-178 |
| C107,108 | Ta. Elect | 10μF | 63V | 066-178 |
| C111,112 | Mylar | .47μF | 250V | 064-069 |
| C113,114 | Ta. Elect | 100μF | 16V | 066-177 |
| C115,116 | Mylar | .1μF | | 064-067 |
| C119,120 | Mylar | .22μF | 250V | 064-068 |
| C123,124 | Ta. Elect | 100μF | 16V | 066-177 |
| C125,126 | Mylar | .22μF | 250V | 064-068 |
| C127,128 | Mylar | .1μF | | 064-067 |
| C129,130 | Mylar | .022μF | 250V | 064-102 |
| C131,132 | Mylar | .01μF | 250V | 064-040 |
| C137,138 | Mylar | .47μF | 250V | 064-069 |
| C201,202 | Mylar | .22μF | 250V | 064-068 |
| C209,210 | Mylar | .01μF | 250V | 064-040 |
| C212,213 | Mylar | .022μF | 250V | 064-102 |
| C301 | Mylar | .47μF | 250V | 064-069 |
| C302 | Ta. Elect | 10μF | 63V | 066-178 |
| C303 | Elect. | 33μF | 40V | 066-204 |
| C305 | Mylar | .22μF | | 064-096 |
| C306 | Mylar | 1μF | 250V | 064-088 |
| C307 | Elect. | 100μF | 40V | 066-176 |
| C312 | Elect. | 80/150/150/200μF 200/200/150/100V | | 066-191 |
| C313,314 | Elect. | 9300μF | 50V | 066-162 |
| C317 | Elect. | 220μF | 100V | 066-201 |
| C401,402 | Elect. | 150μF | 63V | 066-205 |
| C403,404 | Elect. | 470μF | 4V | 066-136 |
| C419,420 | Elect. | 10μF | 35V | 066-173 |
| C427,428 | Ta. Elect | 1.5μF | 20V | 066-158 |

## DIODES

| | | | |
|---|---|---|---|
| D301,302 | Si. Rectifier | | 070-041 |
| D303,304 | Si. Rectifier | | 070-041 |
| D305,306 | Si. Rectifier | | 070-031 |
| D307 | Zener | 75V | 070-025 |
| D308 | Si. Rectifier | | 070-031 |
| D309 | Zener | 20V | 070-064 |
| D401,402 | Si. Rectifier | | 070-047 |
| D403,404 | Si. Rectifier | | 070-046 |
| D405,406 | Si. Rectifier | | 070-047 |
| D407,408 | Si. Rectifier | | 070-047 |
| D409,410 | Si. Rectifier | | 070-031 |
| D411,412 | Si. Rectifier | | 070-031 |
| D413,414 | Ge. PNP Transistor | | 132-098 |

## FUSES

| | | | |
|---|---|---|---|
| F401,402 | Fuse | 5A | 089-014 |
| F403,404 | Fuse | 5A | 089-014 |
| CB301 | Circuit Breaker | 4A | 088-007 |

## CHOKES

| | | | |
|---|---|---|---|
| L401,402 | Choke | 4μH | 122-105 |

## TRANSISTORS

| | | |
|---|---|---|
| Q101,102 | Si. PNP transistor | 132-096 |
| Q103,104 | Si. PNP transistor | 132-096 |
| Q105,106 | Si. NPN transistor | 132-095 |
| Q107,108 | Si. NPN transistor | 132-093 |
| Q109,110 | Si. NPN transistor | 132-093 |
| Q111,112 | Si. NPN transistor | 132-093 |
| Q113,114 | Si. NPN transistor | 132-095 |
| Q115,116 | Si. NPN transistor | 132-095 |
| Q301 | Si. NPN transistor | 132-094 |
| Q302 | Si. PNP transistor | 132-096 |
| Q303 | Si. NPN transistor | 132-078 |
| Q401,402 | Si. PNP transistor | 132-056 |
| Q403,404 | Si. PNP transistor | 132-056 |
| Q405,406 | Si. NPN transistor | 132-081 |
| Q407,408 | Si. NPN transistor | 132-021 |
| Q409,410 | Si. PNP transistor | 132-032 |
| Q411,412 | Si. NPN transistor | 132-080 |
| Q413,414 | Si. PNP transistor | 132-098 |
| Q415,416 | Si. NPN transistor | 132-070 |
| Q417,418 | Si. NPN transistor | 132-070 |

## POTENTIOMETERS

| | | |
|---|---|---|
| R201 | Balance control | 134-240 |
| R210 | Volume control | 134-239 |
| R211 | Bass trim control | 134-254 |
| R212 | Bass trim control | 134-254 |
| R215 | Treble control | 134-238 |
| R216 | Bass control | 134-237 |
| R227 | Treble trim control | 134-253 |
| R228 | Treble trim control | 134-253 |